

Remarks/Arguments

Claims 1-4, 6-9, 11-16 and 18 are pending in the present application. Claims 5, 10 and 17 were canceled; claims 1-4, 6, 7, 9, 11, 12 and 16 were amended. No claims have been added. Applicants have carefully considered the cited art and the Examiner's comments, and believe the claims patentably distinguish over the cited art and are allowable in their present form. Reconsideration of the rejection is, accordingly, respectfully requested in view of the above amendments and the following comments.

An amendment was made to the specification to correct a typographical error noted therein. No new matter has been added by the amendment.

The Examiner has objected to claims 3 and 6 because of errors noted therein, and has required correction of the errors. By the present Amendment, the noted errors in claims 3 and 6, as well as an error in claim dependency noted in claim 2, has been corrected. Withdrawal of the objection to claims 3 and 6 is, accordingly, respectfully requested.

I. 35 U.S.C. § 102, Anticipation

The Examiner has rejected claims 1-3, 8, 11, 13-15 and 18 under 35 U.S.C. § 102(b) as being anticipated by Yoshimura et al. (U.S. Patent No. 5,854,868). This rejection is respectfully traversed.

In rejecting the claims, the Examiner states the following:

With respect to claims 1, 2 and 11, Yoshimura et al. (figures 1A, 5A and 5B) disclose a method and an apparatus of an optical waveguide device comprising a first optical waveguide having a first end (see figure 1A); a second optical waveguide having a first end, the first ends of the waveguides being separated by a gap (figure 1A); and an optical coupler extending across the gap between the first ends of the waveguides, the optical coupler comprising material including a waveguide region, the waveguide region having a shape defined by overlapping cones of light emitted from the first ends of the waveguides into the material (figure 5B and column 5, lines 34-42); wherein the material has a refractive index capable of being increased by exposing the material to light of a particular wavelength or wavelength band (column 3, lines 62-66).

Office Action dated April 5, 2005, page 3.

Claim 1 of the present application as amended herein is as follows:

1. An optical waveguide device, comprising:
 - a first optical waveguide having a first end;
 - a second optical waveguide having a first end, the first ends of the first and second optical waveguides being separated by a gap; and
 - an optical coupler extending across the gap between the first ends of the first and second optical waveguides, the optical coupler comprising a waveguide region and a region surrounding the waveguide region, the waveguide region having a first refractive index and a shape that diverges from the first end of each of the first and second optical waveguides as defined by overlapping cones of light emitted from the first ends of the first and second optical waveguides into the optical coupler, and the region surrounding the waveguide region having a second refractive index different from the first refractive index.

A prior art reference anticipates a claimed invention under 35 U.S.C. § 102 only if every element of the claimed invention is identically shown in that single prior art reference, arranged as they are in the claims. *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). All limitations of a claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983).

Applicants respectfully submit that Yoshimura et al. (hereinafter Yoshimura) does not identically show every element of the claimed invention arranged as they are in the claims; and, accordingly, does not anticipate the claims. With respect to claim 1, in particular, Yoshimura does not disclose an optical coupler extending across a gap between first ends of first and second optical waveguides, “the optical coupler comprising a waveguide region and a region surrounding the waveguide region, the waveguide region having a first refractive index and a shape that diverges from the first end of each of the first and second optical waveguides as defined by overlapping cones of light emitted from the first ends of the first and second optical waveguides into the optical coupler, and the region surrounding the waveguide region having a second refractive index different from the first refractive index” (emphasis added) and, therefore, does not anticipate claim 1.

The Examiner refers to figure 5B and column 5, lines 34-42 of Yoshimura as disclosing a waveguide region having a shape defined by overlapping cones of light emitted

from first ends of waveguides into a material extending across a gap between the ends of the waveguides. Column 5, lines 34-42 reads as follows:

FIGS. 5A and 5B show other embodiments for compensating for mispositioning between waveguides. In these embodiments, a photopolymer or photoglass is formed between waveguides or between waveguides and fibers, and light of a wavelength to which the material is sensitive is emitted thereon from the fibers or waveguides (from either one, but preferably from both). This forms a coupling path between the two, and further increases the coupling efficiency between the two.

This recitation in Yoshimura states only that a photopolymer is formed between waveguides and is illuminated with light to which the material is sensitive to form a coupling path between the waveguides. The reference does not disclose any details of the coupling path. For example, Yoshimura does not disclose an “optical coupler comprising a waveguide region and a region surrounding the waveguide region” as now recited in claim 1, nor does the reference disclose that the waveguide region has “a first refractive index and a shape that diverges from the first end of each of the first and second optical waveguides as defined by overlapping cones of light emitted from the first ends of the first and second optical waveguides into the optical coupler”, or that and the region surrounding the waveguide region has “a second refractive index different from the first refractive index” as are also now recited in claim 1. The reference nowhere discusses the shape of the coupling path formed between the waveguides, and figure 5B of Yoshimura, also referred to by the Examiner, at best, merely illustrates an optical refractive index material of generally rectangular shape. Furthermore, Yoshimura nowhere discusses a region surrounding the coupling path, or that the coupling path has a first refractive index that is different from a refractive index of a region surrounding the coupling region. Only the present application contains such disclosure.

In general, Yoshimura does not disclose many of the features now recited in claim 1, and, therefore, does not anticipate claim 1. Claim 1, accordingly, is believed to be allowable over Yoshimura in its present form, and it is respectfully requested that the Examiner so find.

Claims 2, 3 and 8 depend from and further restrict claim 1, and should also be allowable in their present form, at least by virtue of their dependency.

Independent claim 11 has been amended in a manner generally similar to claim 1, and is also not anticipated by Yoshimura for substantially the same reasons discussed above with respect to claim 1. For example, Yoshimura does not disclose exposing a material filling a

gap between adjacent ends of aligned optical waveguides to overlapping conical beams of light emitted from the adjacent ends “to define a waveguide region in the material having a refractive index and a shape that diverges from the adjacent ends of each of the first and second optical waveguides as defined by the overlapping conical beams of light, the exposing increasing the refractive index of the material in the waveguide region to provide the waveguide region with a refractive index that differs from a refractive index of a region surrounding the waveguide region”, as now recited in claim 11.

Claim 11, accordingly, should also be allowable over Yoshimura in its present form, and it is respectfully requested that the Examiner so find.

Claims 13-15 and 18 depend from and further restrict claim 11, and should also be allowable over Yoshimura, at least by virtue of their dependency.

Therefore, the rejection of claims 1-3, 8, 11, 13-15 and 18 under 35 U.S.C. § 102 has been overcome.

II. Objection to Claims

The Examiner has stated that claims 4-7, 9, 10, 12, 16 and 17 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In response, each of claims 4, 6, 7, 9, 12 and 16 have been rewritten in independent form to incorporate the subject matter of their base claim and any intervening claim. In addition, claim 4 has been amended to recite the subject matter of original claims 4 and 5 in alternative form, and claim 5 has been cancelled; claim 9 has been amended to recite the subject matter of original claims 9 and 10 in alternative form, and claim 10 has been cancelled; and claim 16 has been amended to incorporate the subject matter of original claims 16 and 17 in alternative form, and claim 17 has been cancelled. Accordingly, claims 4, 6, 7, 9, 12 and 16 should now be allowed

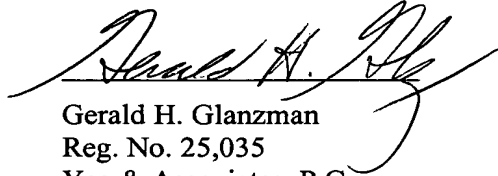
III. Conclusion

For all the above reasons, it is believed that claims 1-4, 6-9, 11-16 and 18 are allowable in their present form, and that this application is now in condition for allowance. It is, accordingly, respectfully requested that the Examiner so find and issue a Notice of Allowance in due course.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

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Respectfully submitted,



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